## 6132.200 File no.: 07.2001 / 10.2001 Edition **Test Certificate** DrägerService Installation site: Babytherm 8000 Explanation of Symbols OK Z = Check condition Defect/error/fault F = Check function Serial no.: D = Check for leaks Spare parts used Date of delivery/ startup: P = Enter value Report Invoice no. or

delivery no.:

Other:

## Important information for testing of the mattress heater:

a) Mattress heater is cold (< 30 °C):

Accessories missing

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- Remove gel mattress from the resting surface.
- Carry out test steps 5.2 through 5.2.4 first, but pay attention to test step 4.2.4.3.
- b) Mattress heater is warm (>30 °C):
- Gel mattress remains on resting surface.
- Mattress heater remains switched on, but pay attention to test step 4.2.4.3.
- Adjust the target value to 32 ℃.
- 1. Configuration, protection class, and accompanying documents
- 1.1 Information about configuration

Babytherm 8000 WB (heated cot)

- Trolley, small
- Mattress heater

Babytherm 8000 OC (resuscitation or intensive care unit)

- Trolley large, or large
- trolley, shortened
- Stand

	<ul> <li>Infant Radiant Heater 600 W</li> </ul>							
	<ul> <li>Mattress heater (in intensive care unit only)</li> </ul>							
	Accessories:							
	<ul> <li>Height adjustment</li> </ul>							
	- Canopy							
	<ul><li>Swivel cupboard (1x or 2x)</li></ul>							
	<ul><li>Suction device</li></ul>							
	- Ventilator							
	<ul><li>Monitoring</li></ul>							
1.2	Record configuration							
1.2.1	Mattress heater fitted							
	If yes, enter protection class "B" or "BF": (Important for protective earth conductor	Р						
	test, in case of doubt consult Service							
	Bulletin no. 2, USA/Canada TSB # 1). Externature is the stamp next to the rating plate of the Babytherm:	ernal dist	ingui	shing				
	Type B: Type BF:							
	*							
1.2.2	Height adjustment fitted, yes/no	Р						
1.2.3	Infant radiant heater fitted, enter serial			ı				
	number.	Р						
1.3	Information relating to accompanying documents							
1.3.1	Instructions for Use/Operating Instructions							
	(Instructions for Use/Operating Instructions depending on unit version and protection class)							
	Instructions for Use/Operating Instructions differ depending on protection class type B or type BF:							
	Type B (up to approx. end of '94): Joint Instructions for Use/Operating Instructions for heated cot and OC (open care unit):							

German 9028228English 9028253

Type BF (as of approx. start of '95): Babytherm 8000 WB heated cot:

- German 9028323
- English 9028324
- French 9028325
- Spanish 9028326
- USA 9028327 (Babytherm 8000) + 9028476 (RH600)

Babytherm 8000 OC:

- German 9028352
- English 9028353
- French 9028354
- Spanish 9028289

2.	Trolley and column		
2.1	Units without electrical height adjustment		
2.1.1	2 x castors 2M 21048	Z	
2.1.2	2 x lockable castors 2M 21050	Z	
2.1.3	Cap 2M 20989 over castors.	Z	
2.1.4	Trolley not bent at the mounts for the castors	Z	
2.1.5	Column with connection to trolley (bottom) and base plate (top)	Z	
2.2	Units with electrical height adjustment		
2.2.1	2 x castors 125 mm 2M 20792	Z	
2.2.2	2 x lockable castors 125 mm 2M 20794	Z	
2.2.3	Cap 2M 20348 on ends of trolley tubes. The caps hold the castors	Z	
2.2.4	Pedal for height adjustment	Z	
2.2.5	Column	Z	
2.2.6	Mains fuses of column match rated values of column.	Z	
2.2.7	Function test of height adjustment		
	Test all 4 pedals.	F	

3.	Base plate, small or large, on column (depending on version)						
3.1	Base plate, small, 2M 21148	Z					
3.1.1	Grip strip (accessory rail), 2M 20860	Z					
3.1.2	Swivel cupboard with attachment (if fitted)	ZF					
3.2	Base plate, large, 2M 21146; or base plate, shortened, 2M 21714						
	This base plate may only be fitted on a trolley of the same length.	Z					
3.2.1	Grip strips (accessory rails), 2M 20862	Z					
3.2.2	Swivel cupboard with attachment						
	If fitted, there may be one or two cupboards.	ΖF					
3.2.3	Stand (accessory poles)						
	Retighten screws.	Z					
3.2.4	Tray stand for monitors						
	Retighten screws.	Z					
4.	Cot						
4.1	Lower section of cot						
	Secured to base plate with 4 hex socket head screws.	Z					
4.2	Upper section of cot						
4.2.1	Corners 2M 21390 for mounting of panels	Z					
4.2.2	Panels, 4 x (15 cm or 23 cm)						
	Panels must engage securely in the corners.	ΖF					
4.2.2.1	Hose ducts 2M 20434	Z					
4.2.2.2	Only with 23 cm end panel at the rear:						

	Lock 2M 13042 Injector 2M 14190	-			T			
	Label with flow table 2M 21147	Z						
4.2.3	Inner panel 2M 20936 (height approx. 70 mm), if fitted	Z						
4.2.4	Resting surface tilt adjustment							
4.2.4.1	Both reset springs 8300445 for locking lever are fitted.	Z						
4.2.4.2	Function of resting surface adjustment							
	Pull the locking lever and let go again: The spring tension should be sufficient to return the lever to its original position.							
	Pull the locking lever 1/2 out (approx. 20 mm): The resting surface should remain locked.							
	Pull the locking lever 3/4 out (approx. 30 mm): Resting surface can be adjusted without noise.							
	Check engagement in 10 different positions. The resting surface should engage reliably and without play.	ΖF						
4.2.4.3 *	Additional testing at 4-year intervals							
	Unscrew (4 screws) complete resting surface (upper and lower section). Visually check gearing in lower section and in notch 2M 20855.	7.5				1		
		ΖF						
	Important: Secure the two fastening screws of the notch with UHU-Plus glue. Grease movable metal parts with Molykote 55M (1554093). Do not grease the teflon gliders.							
	Re-install the resting surface.							
4.2.5	Mattresses							
4.2.5.1	Foam mattress 2M 21012							
	Only if there is no resting surface heating.	Z						
4.2.5.2	Gel mattress 2M 20827 only if resting surface heating is fitted.	Z						
	Important: Repair small fissures on surface using adhesive tape or repair set for gel mattress 2M 21324.	۷						
4.2.5.3	Mattress sheet 2M 21272 (if available)	Z						
400	,							
4.2.6	Dummy plate 2M 21067							

	If no mattress heater fitted.	Z	
4.2.7	Optional hook rail beneath the upper	_	
	section of the resting surface with hook 2M 21293	Z	
4.2.8	Optional grip strip 2M 21468 on upper		
	section of resting surface	Z	
4.2.9	Optional canopy 2M 21030	ΖF	
4.2.9.1	Thermometer 2M 11111		
	Reference measurement in water bath, permissible deviation 0.4 °C	F	
5.	Mattress heater (if fitted)		
5.1	General condition		
5.1.1	Heating plate, all-round seal 2M 20882	_	
	undamaged.	Z	
5.1.2	Control unit	Z	
5.1.2.1	Membrane keypad		
5.1.2.2	Power switch	Z	
5.2	Functional check		
	If mattress heater is cold (actual value below 30 ℃) remove gel mattress from resting surface so that units warms up more quickly to minimum temperature of 31.1 ℃. If mattress heater is warm, leave the gel mattress on the resting surface.		
5.2.1	Power-on test		
	Switch on the unit.		
	During the self test, all displays and the audible alarm are activated for approx. 1 second.		
	Then: Target value display = 37.0 ℃	F	
5.2.2	Keypad		
	Without pressing the ">37 ℃ / <35 ℃" key beforehand, the target value can be adjusted between 35.0 and 37,0 ℃ in 0.1 ℃ increments.		
	After pressing the >37 °C / <35 °C" key, the target value can be adjusted between 30.0 and 38.5 °C in 0.1 °C increments.	F	

	Adjust the target value to 37.1 °C.						
5.2.3	Lamp test						
	Press the "Check" key.						
	All displays and the audible alarm are activated for approx. 2 seconds. Then all displays and the audible alarm are deactivated for approx. 2 seconds. The original display appears afterwards	F					
5.2.4	Power failure alarm						
	Disconnect Babytherm from mains power supply.						
	A visual and audible alarm should be given.						
	Reconnect to mains power supply.						
	Unit should continue to operate with the previous target value of 37.1 °C.	F					
	Allow the unit to warm up to at least 31.1 °C (displayed value).						
5.2.5	Alarms						
	Adjust target value 1.1 °C lower and higher, respectively, than the actual value.						
	A visual and audible ± 1 °C alarm should be generated. It should be possible to silence the audible alarm with the						
	"Silence" key.	F					
5.2.6	Tests in DS Mode						
	Call up DS mode:						
	Press the "Silence" and the "arrow-down key" at the same time for 4 seconds.						

Switch from error list to diagnosis mode using the ">37 °C/<35 °C" key.

>37¦C <35¦C	ABC - DEF - Silence Check									
	The mode number can be switched using the "arrow up" or the "arrow-down" key.									
	Important: Temperature values in modes 1, 2, 3, and 4 must be read out within 10 seconds.									
5.2.6.1	Mode 0, output of software version									
	F = mode number 0 (flashing)									
	A.BC = software version	Р	Γ							
5.2.6.2	Mode 1, temperature channel 1					İ				
	F = mode number 1 (flashing)									
	AB.C = temperature in $^{\circ}$ C, 1.0 $^{\circ}$ C higher than		_							
	during operation	Р	L							L
5.2.6.3	Mode 2, temperature channel 2									
	F = mode number 2 (flashing)									
	AB.C = temperature in ℃, 1.0 ℃ higher than during operation	Р	Γ	$\overline{T}$	$\overline{T}$	<u> </u>		Π		
5.2.6.4	Mode 3, temperature channel 3		_							_
	F = mode number 3 (flashing)									
	AB.C = temperature in °C, 1.0 °C higher than									
	during operation	Р								
5.2.6.5	Mode 4, temperature channel 4									
	F = mode number 4 (flashing)									
	AB.C = temperature in ℃, 1.0 ℃ higher than during operation	Р	Γ							
5.2.6.6	Evaluation of temperature values from modes 1 through 4		L			 				_
	The following temperature difference are permitted if no objects are on the gel mattress:									

	Between mode 1 and 2	0.3 ℃						
	Between mode 3 and 4	0.3 ℃	F					
	Important: A sensor alarm is $> 0.5  ^{\circ}$ C.	generated at						
	Between mean value from n and mean value from mode 1.0 ℃		F					
	Important: A sensor alarm is > 5.0 ℃. This large tolerance because the gel mattress mattress one side with cold objects deperation. When no objects mattress, the typical deviation only 0.3 ℃.	e is necessary by be laden on uring are on the						
5.2.6.7	Mode 1, accuracy of temper measurement	ature						
	F = mode number 1 (flashing	g)						
	AB.C = temperature in °C, 1 than during operation	.0 ℃ higher						
	D = switching status, overter comparator: 0 = no overtemperature, tem 1 = overtemperature							
	Press the "Check" key:							
	A.BC = 41.6 ℃ ±0.2 ℃ and	D = 1	F					
5.2.6.8	Mode 3, accuracy of temper measurement	ature						
	F = mode number 3 (flashing	g)						
	AB.C = temperature in ℃, 1 than during operation	.0 ℃ higher						
	D = switching status, overter comparator: 0 = no overtemperature, tem 1 = overtemperature							
	Press the "Check" key:							
	A.BC = 41.6 °C ±0.2 °C and	D = 1	F					
5.2.6.9	Mode 7, GoldCap voltage							

	F = mode number 7 (flashing)									
	A.BC = GoldCap voltage in V									
	Press the "Check" key:									
	A.BC > 3.5 V	Р								
5.2.6.10	Mode 8, A/D test channel									
	F = mode number 8 (flashing)									
	A.BC = voltage in V 5.0 ±0.2 V	Р								
5.2.6.11	Mode 9, watchdog time 1									
	F = mode number 9 (flashing)									
	ABC = time in ms = $250 \pm 3$ ms	Р								
5.2.6.12	Mode A, watchdog time 2									
	F = mode number A (flashing)									
	ABC = time in ms = $250 \pm 3$ ms	Р								
5.2.6.13	Deletion of error list									
	Return to error list with key ">37 °C/<35 °C".									
	Delete error list with "Silence" key.	F								
	Jointly press "Silence" and "arrow-down" keys until unit returns to operating mode.									
6.	Infant radiant heater 600 W with skin temperature control (2M 19300 with different models)									
6.1	General condition									
6.1.1	Attachment	Z								
6.1.2	Swiveling and locking	ZF								
6.1.3	Membrane keypad	Z								
6.1.3.1	On/Off switch	ΖF								
6.1.3.2	Lighting switch	ΖF								
6.1.3.3	Socket for skin-temperature sensor	ΖF								
6.1.4	Heater guard	Z								
6.1.5	Heaters, 4x		•	•	•	•	•	•		
	No black discoloration on ceramics.	Z								
6.1.6	Halogen lamp		<u> </u>	1						

	(adjustable) or						
	2x halogen lamp, 12 V/20 W, 2M 18653	ΖF					
6.1.7	Power cord	Z					
6.1.8	Skin-temperature sensors						
6.1.9	Skin-temperature sensor, calibrated, 8200756	Z					
6.1.10	Adapter, 2M 20 736, for disposable skin-						
	temperature sensor, calibrated, 2M 20737 (20x)	Z					
6.2	Replacement of wear and tear parts						
	To do so, unscrew radiant heater and open up control system housing.						
6.2.1 *	Replace rechargeable battery, 18 43 451, every 2 years.	ΖF					
	Next replacement:						
6.2.2 *	Replace time-keeper RAM, 18 28 142, on CPU PCB every 4 years (applies to units as of SW 1.04 only, refer also to 6.4.2).						
	Next replacement:						
	Re-attach the radiant heater, secure the 4 fastening screws with Loctite 221.						
6.3	Compare power fuses to values given on rating plate.	Z					
6.4	Functional check						
	Connect up skin-temperature sensor.						
6.4.1	Power-on test						
	Switch on the unit.						
	All displays and the audible alarm are activated for a short period.						
	Then press the "Auto" key.						
	The "Auto" LED comes on.						
	Setpoint of skin-temperature value = 36.3 °C. The measured value for the skin temperature is displayed if this is between 33.0 and 38.0 °C. If the setpoint value is greater than the actual value, the heater LED flashes or is permanently on.	F	T		Γ		

6.4.2	Readout of software version							
	Press "Start" and "Stop/Reset" keys at the same time.							
	The software version is displayed.	F						
6.4.3	Accuracy of temperature measurement							
6.4.3.1	Electronics							
	Press the "Check 36°C" key.							
	Actual value displayed = 36.0 ±0.1 ℃.	F						
6.4.3.2	Sensor with electronics							
	Reference measurement between skintemperature sensor and thermometer 2M 11111 or Testoterm immersion-type sensor in water bath at 33.0 to 38.8 °C.							
	Permissible deviation 0.4 ℃.	F						
6.4.4	Setpoint adjustment , skin temperature							
	The setpoint should be adjustable between 35.0 and 37 ℃ in increments of		_					
	0.1 ℃.	F						
6.4.5	0.5 ℃ alarm							
	Any deviation greater than 0.5 °C between the setpoint and the actual value of the skin temperature should result in a visual and audible alarm. It should be possible to silence the audible alarm with	_		Γ	 T	Τ		
	the "Silence" key.	F						
6.4.6	Manual mode							
	Press the "Man" key.							
	"Man" LED comes on, heater LED flashes. Power setpoint = 5 (bargraph)	F						
6.4.7	Heating capacity setting							
	It should be possible to set the heating capacity between 1 and 10.	F						
	Set heating capacity to 10 and press the "Start" key of the timer.							
6.4.8	15 minutes reset test							
	With this greater than 5 setting (>300 W) an intermittent alarm tone should sound after 15 minutes and the "Reset 15 min" LED should flash. The timer was started beforehand as flag. After the alarm is given, press the "Reset 15 min" key.							
	Alarm goes off.	F						

6.4.9	Timer									
	Press the "Stop/Reset" key once.									
	The timer stops.									
	Press the "Stop/Reset" key again.									
	The timer is reset to "0.00".	F								
6.4.10	Power failure alarm									
	Disconnect power supply.									
	A visual and audible alarm should be given.	F								
	Re-connect power supply.									
	The unit continues to operate with previous setpoint settings (exception: Units with SW 0.04)	F		Ι					<u> </u>	
						<u> </u>	<u> </u>			
6.5	N/A									
		Z								
0.0	Ot 1/4 II ) ( DI 1000									
6.6	Stand (trolley) for RH600 (option)	ΖF								
7.	Babytherm multiple socket outlet and testing of electrical safety									
7.1	Triple socket outlet									
	Beneath the base plate for the resting surface is a triple socket outlet, to which only loads envisaged for the Babytherm 8000 may be connected:									
	<ul> <li>Dräger Infant Radiant Heater (not for US)</li> </ul>	S version	in US	SA/Ca	ınada	a)				
	<ul> <li>Dräger mattress heater</li> </ul>									
	- Babytherm electrical height adjustment									
	No other units may be connected to the multiple socket outlet.	Z								
7.1.1	Power cord of multiple socket outlet	Z								

7.1.2	multiple socket outlet from:		
	- Mattress heater control		
	- Infant radiant heater (n/a for US version	in USA	/Canada)
	Cables must be routed such that there is no danger of the tilt mechanism causing damage.	ΖF	
7.2	Check protective earth conductor resistance at loads connected to the triple socket outlet.		
	Test via joint power cord of the multiple socket outlet.		
7.2.1	Electrical height adjustment		
	Test locations: Trolley and column.		
	The protective conductor resistance should be less than 0.2 ohms.	Р	
7.2.2	Mattress heater		
	Important: Testing differs depending on protection class.		
7.2.2.1	Protection class type BF		
	Test locations: Housing of control unit:		
	Protective earth conductor resistance should be less than/equal to 0.2 ohms.	Р	
	There is no protective earth conductor connection to the aluminum plate of the mattress heater.		
	R = ω	Р	
7.2.2.2	Protection class type B		
	Test locations: Housing of control unit and aluminum plate of mattress heater.		
	The protective conductor resistance should be less than 0.2 ohms.	Р	
7.2.2.3	Conformity with indication of protection		
	class (stamp) next to rating plate of Babytherm	Z	
7.3	Electrical safety test		

7.3.1 Protective earth conductor resistance of the infant radiant heater

The following protective earth conductor resistance test is in accordance with IEC 601/1, item 18, para f:

7.3.1.1 Electrolyte-polished mesh guard (2M 18670)



The protective earth conductor resistance should be less than/equal to 0.2 ohms.

Ρ

Р

7.3.1.2 Electrolyte-polished holder (2M 20571) of the halogen lamp



The protective earth conductor resistance should be less than/equal to 0.2 ohms.

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## 7.3.1.3 Electrolyte-polished reflector plate (2M 19291)



The protective earth conductor resistance should be less than/equal to 0.2 ohms.

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7.3.1.4 Left-hand and right-hand shielding plates (2M 18648)

Note: The plate is anodized. The surface at the measurement point must therefore be scratched a little.



The protective earth conductor resistance should be less than/equal to 0.2 ohms.

7.3.1.5 Left-hand side plates (2M 19293) and right-hand side plates (2M 19292)

Note: The plate is anodized. The surface at the measurement point must therefore be scratched a little.



The protective earth conductor resistance should be less than/equal to 0.2 ohms.

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7.3.1.6 Varnish-free point of chromated radiant heater housing (2M 19296)



The protective earth conductor resistance should be less than/equal to 0.2 ohms.

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7.3.1.7 Chromated cover plate (2M 20265) of the radiant heater



The protective earth conductor resistance should be less than/equal to 0.2 ohms.

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7.3.1.8 Cross shielding plate (2M 18678) in the radiant heater

Note: The plate is anodized. The surface at the measurement point must therefore be scratched a little.



The protective earth conductor resistance should be less than/equal to 0.2 ohms.

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7.3.1.9 Housing rear wall of radiant heater electronics

Note: For the measurement, swivel the radiant heater by approx. 90°, remove the screw in the center of the cover (8305945), and scratch the varnished surface in the area underneath the screw.



The protective earth conductor resistance should be less than/equal to 0.2 ohms.

7.3.2 Equivalent device leakage current

Switch on the radiant heater.

Subsequent measurements may exceed the initial value by max. 50%, but must not exceed the test value.

Ρ

Test value:  $I_A$  less than or equal to 0.75 mA

Initial value: I <sub>A</sub> =	mA
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7.4	connected to the triple socket outlet.		
	Testing of all devices is done via joint power cord of the multiple socket outlet. To do so, switch on all devices and operate height adjustment. Only one measurement is necessary.		
	Subsequent measurements may exceed the initial value in the Test Certificate by max. 50%, but must not exceed the specified test value.		
	For 220/240V units:		
	Test value: Equivalent leakage current is less than/equal to 0.4 mA.	Р	
	For 100/127V units:		
	Test value: Equivalent leakage current is less than/equal to 0.2 mA.	Р	
	Note: Always enter the initial value of each respective device combination in a new Test Certificate:		
	Initial value: IA =mA		
8.	Accessories	-	
	Note: Test item 8.1 through 8.5 n/a for US	S versio	n in USA/Canada.
8.1	Suction device		
8.1.1 *	Replace bacterial filter CH 102.	Z	
	(set of 5 6723976)		
8.1.2	Carrying frame M 25858	Z	
8.1.2.1	Jar holder	Z	
8.1.2.2	Connecting hose	Z	
8.1.2.3	Secretion suction hose M 25780	Z	
8.1.2.4	Secretion sightglass or finger tip	Z	
8.1.3	Container, M 20091 (2x)	Z	
8.1.4	Jar cap 2M 85011	Z	
8.1.4.1	Check that collar M 26008 and angled	_	
	socket 2M 19063 are seated securely.	Z	
8.1.5	Float M 26007	Z	

8.1.6	Function						
	Connect up complete suction device. Create vacuum and turn the bottle over.						
	The float should be sucked in.						
	Turn the bottle over and interrupt vacuum.						
	The float should drop back.	F					
8.1.7	Pressure-limiting valve (if fitted) and mica washer R 17329	ZFD					
8.1.8	Ejector						
8.1.8.1	Capacity with pediatric bronchial suction device 2M 85125 (-0.5 bar)						
	Capacity –0.5 bar, of which –0.4 bar in 10 s.	F					
8.1.8.2	Capacity with bronchial suction device 2M 85120 (-0.9 bar)						
	Capacity -0.8 bar, of which -0.7 bar in 10 s.	ΖF					
8.1.9	Vacuum gauge						
	Reference measurement, permissible tolerance ±4% of full-scale value	ΖF					
8.1.10	Shut-off valve						
8.1.11	Control valve	Z					
8.1.12	Central supply connecting hose						
	In accordance with national regulations.	ΖD					
8.2	Ventilator						
	Carry out checks according to relevant Test Certificate.						
8.3	Monitoring						
	Carry out checks according to relevant Test Certificate.						
8.4	Phototherapy units						
	Carry out checks according to relevant Test Certificate.						
8.5	Infusion-bottle holder 2M 16520	Z					
8.6	Holder for ventilation hoses 2M 21191	Z					

8.7	Tray 2M 24678 (300 x 200 mm) with rail clamp for standard rail	Z					
9.	Place fully functional unit at user's/owner's disposal.						
10.	Confirmation of test						
	Name:						
	Date						

\* These steps are regarded as repair work and are therefore not included in the inspection service price.

11.	Report: